DOCUMENT RESUME

ED 343 617 IR 054 049

AUTHOR Brennan, Mary Alice
TITLE Trends in Educational Technology 1991. ERIC Digest.
INSTITUTION ERIC Clearinghouse on Information Resources, Syracuse, N.Y.
SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
REPORT NO EDO-IR-92-1
PUB DATE Mar 92
CONTRACT RI88062008
NOTE 4p.; This digest is based on "Trends in Educational Technology 1991," by Donald P. Ely.
AVAILABLE FROM ERIC Clearinghouse on Information Resources, Syracuse University, 030 Huntington Hall, Syracuse, NY 13244-2340 (free while supply lasts; please include self-addressed stamped envelope).
PUB TYPE Information Analyses - ERIC Clearinghouse Products (071) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Computer Assisted Instruction; Content Analysis; Distance Education; *Educational Technology; Elementary Secondary Education; *Evaluation; Higher Education; Instructional Design; *Instructional Development; Microcomputers; *Professional Education; Research and Development; Training; Trend Analysis
IDENTIFIERS ERIC Digests

ABSTRACT

A content analysis was performed to determine the trends in educational technology for the period October 1, 1990, through September 30, 1991. Sources for the analysis included five leading professional journals in educational technology, papers given at annual conventions of three professional associations, dissertations from five universities that have a high level of doctoral productivity, and the educational technology documents that have been entered in the ERIC database. The analysis was complemented by the examination of supplementary documents to confirm the trends indicated in the content analysis. This digest features the top trends and selected issues identified in the study. Trends reflect: (1) the creation of technology-based teaching/learning products that are based largely upon instructional design and development principles; (2) an increasingly important role for evaluation in the instructional development process; (3) the establishment of distance education as a major vehicle of instruction at all levels of education; (4) the presence of microcomputers in almost all public schools in the United States; and (5) the use of telecommunications to establish new links between educators and students. (11 references) (MAB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED343617

ERIC Digest:

Trends in Educational Technology 1991

by
Mary Alice Brennan
March 1992

This digest is based on **Trends in Educational Technology 1991**, by Donald P. Ely.

IR054049

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

M.A. Brennan

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

ERIC

ERIC Clearinghouse on Information Resources

Syracuse University
School of Education • School of Information Studies
030 Huntington Hall
Syracuse, New York 13244-2340
(315) 443-3640

ERIC DIGEST

March 1992 EDO-IR-92-1

Trends in Educational Technology 1991

by Mary Alice Brennan

This digest is based on **Trends in Educational Technology 1991**, by Donald P. Ely.

A content analysis was performed to determine the trends in the field of educational technology for the period October 1, 1990 through September 30, 1991. Sources for the analysis included five leading professional journals in educational technology; papers given at annual conventions of three professional associations; dissertations from five universities that have a high level of doctoral productivity; and the educational technology documents that have been entered into the ERIC database. The analysis was complemented by the examination of supplementary documents to confirm the trends indicated in the content analysis.

This digest features selected trends identified in the study. For a full discussion of the study methodology and findings, the reader is referred to the source noted above.

TREND: The creation of technology-based teaching/learning products is based largely upon instructional design and development principles.

Over 15% of the teaching/learning materials reviewed in this year's study were concerned with design and development. Several subheadings related to design and development include message design, product development, individual differences, and course development. Needs assessment and task analysis were less conspicuous, and models and theories in support of specific design and development approaches are prominent in the literature. Appearing with increased frequency is the term "constructivism": that idea that the learner, rather than the teacher, develops (or "constructs") knowledge. Arguments for and against the concept have been presented in the literature. Finally, it is evident that research on screen design is influencing the development of teaching/learning products using computers.

TREND: Evaluation has taken on greater importance as the concept of performance technology has been further developed.

The descriptor "performance technology" is being used more frequently, especially in the business-industry-government context, to refer to effective instructional design and delivery. Performance technology is based on the conviction that there are training procedures that can guarantee learning, i.e., "performance," and that there are data, derived from careful evaluation, that demonstrate the effectiveness of a given design. Integral to this concept is process evaluation. Another aspect of evaluation in the 1991 literature is product evaluation, which is the assessment of instructional materials that may have potential uses in other settings. Although evaluation has typically been seen as peripheral to the educational technology field, it is now becoming integral to the instructional design process, and, as such, an essential element in the field.

TREND: Distance education is evident at almost every educational level in almost every sector.

It has been recently estimated that 25%-50% of the nation's students are reached by distance learning technology ("Technology," 1991). Over 1,500 school districts in 47 states are participating in distance education through the following technologies: satellite, audiographics, microwave, coaxial cable, computer, and fiber optics (Garnette & Withrow, 1990). Many distance education programs offer complete courses with the teacher in a remote location, although some students use this approach to supplement classroom instruction. The delivery of instruction is generally via telecommunications and computer hardware and software, and learners work both independently and in small groups. State policies regarding distance education are evolving. For example, Iowa is investing $50 million in a statewide telecommunications infrastructure. Other state programs of note are in Kentucky, Oklahoma, Michigan, Minnesota, Texas and Virginia. It has been observed that there is probably no other single trend that encompasses the theory and practice of educational technology better than distance education.

TREND: Computers are pervasive in the schools. Virtually every school in the U.S. has microcomputers.

In its annual survey of the numbers of computers in schools, Quality Education Data this year reported results from 83,283 elementary and secondary public schools in the United States. Microcomputer density (the number of students per computer) was 20:1 in 1990-1991, a reduction from 125:1 in 1983-1984. In fact, the percentage of U.S. schools with microcomputers has increased over the past 10 years until it reached 98% in 1990-1991 (Quality Education Data, 1991). A report from the United States Department of Commerce,

IR054049

Bureau of the Census reported that among children 3-17 years of age, 46% used a computer at home and/or at school, a rise from 30% in 1982 (Kominski, 1991). Sheingold and Hadley (1990) observed that computer software has been integrated into classroom practice in the following manner: (1) text processing tools (95%); (2) instructional software (89%); (3) analytic and information tools (87%); (4) programming and operating systems (84%); (5) games and simulations (81%); and (6) graphics and operating tools (81%). It is noted that one of the next steps in determining the role of the computer in education will be to examine the use of computers in teaching and learning in terms of social, vocational, pedagogic, and catalytic rationales.

TREND: Telecommunications is the link that is connecting education to the world.

Telecommunications, the technology of communication by electronic transmission, is being used to establish new connections between educators and students. The term "interactive" is commonly found in relation to telecommunications. Distance education applications, as discussed above, use such interactive telecommunications technologies as electronic mail, computer conferences, and two-way audio and video conferences. Networking is the dominant trend within telecommunications; in 1991, Congress passed the High-Performance Computing Act, which authorizes the creation of the National Research and Education Network (NREN), America's "information superhighway." The educational use of television, through cable, satellite, or videotape, reached new heights in 1991. The most popular classroom use of television was for current affairs programs, followed by literature, performing arts, and history. Access to cable programs was increased through the national Cable in the Classroom project. States are becoming the organizing units for delivery of telecommunications technology. For example, the Massachusetts Corporation for Educational Telecommunications (CET) operates the Mass LearnPike, and the Kentucky Educational Network links all public schools through satellite.

References and Additional Reading

Duffy, T.M., & Jonassen, D.H. (Eds.). (1991, September). Continuing the dialogue on the implications of constructivism for educational technology. *Educational Technology*, 31(9), theme issue.

Ely, D.P. (1992). *Trends in Educational Technology 1991*. Syracuse, NY: ERIC Clearinghouse on Information Resources. ED number pending.

Garnette, C.P., & Withrow, F.B. (1990). Analysis of the U.S. Department of Education's database of distance learning projects. *Journal of Educational Computing Research*, 6(4), 515-522.

Green, K.C., & Eastman, S. (1991, Summer). Access to computing: How many computers and where do we put them? *EDUCOM Review*, 26(2), 59-61.

Gustafson, K. (1991). *A survey of instructional development models. Second edition*. Syracuse, NY: ERIC Clearinghouse on Information Resources. ED 335 027.

Janowiak, R.M. (1990). *Educational technology in kindergarten through twelfth grades*. Chicago, IL: National Engineering Consortium. ED 329 221.

Kominski, R. (1991). *Computer use in the United States: 1989. Current Population Reports, Special Studies, Series P-23, No. 171*. Washington, DC: U.S. Department of Commerce. ED 338 210.

Market Data Retrieval. (1991). *Education and technology*. Shelton, CT: Author.

Quality Education Data, Inc. (1991). *Technology in schools 1990-91 school year*. Denver, CO: Author.

Technology: "Wade right in," manager tells educators. (1991, November). *School Tech News*, 8(9),1.

Sheingold, K., & Hadley, M. (1990). *Accomplished teachers: Integrating computers into classroom practice*. New York: Bank Street College of Education, Center for Technology in Education. ED 322 900.

This digest was prepared for the ERIC Clearinghouse on Information Resources by Mary Alice Brennan, School of Information Studies, Syracuse University. March 1992.

ERIC Digests are in the public domain and may be freely reproduced and disseminated.

To order the complete version of *Trends in Educational Technology 1991*, send $9.50 ($7.50 plus $2.00 shipping and handling) to:

Information Resources Publications
030 Huntington Hall
Syracuse University
Syracuse, New York 13244-2340
(315) 443-3640

Send order to:

Name _____
Address _____
_____
City _____ State _____
Zip _____

This publication was prepared with funding from the Office of Educational Research and Improvement, U.S. Department of Education, under contract no. RI88062008. The opinions expressed in this report do not necessarily reflect the positions or policies of OERI or ED.